

Autonomous Sensory Meridian Response (ASMR): An exploratory study

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Abstract

Thousands of videos have recently emerged online which are specifically designed to evoke a pleasurable and relaxing “tingling” sensation in viewers. YouTube viewers and media publications refer to this pleasurable response as *Autonomous Sensory Meridian Response* (ASMR). ASMR may be a similar experience to musically-induced shivers (frisson), though the exact mechanisms behind ASMR remain largely uninvestigated. This thesis presents two exploratory studies that attempt to characterize ASMR stimuli and the experience. The first study provides a systematic description of 30 ASMR videos randomly sampled from YouTube alongside two sets of control videos: general videos from YouTube matched for date-posted and view-count, and a second group of videos more closely matched for agency. The descriptions included analyses of agency, speech, audio, topical content, and setting. The second study gathers information about viewer experience, including a content analysis of viewer commentary on online videos and forums dedicated to ASMR. This includes analyses of commentaries pertaining to physiological response, presumed cause, psychological response, and function.

Keywords: shivers, frisson, ASMR

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Autonomous Sensory Meridian Response (ASMR): An exploratory study

As the video opens, the frame focuses closely on the face a young woman¹. She smiles gently and looks directly into the camera. She quietly introduces herself and explains that she will be sharing several “triggers” for your relaxation. She then proceeds for the next 61 minutes to tap on the glass of a candle holder, stir gravel, tap on a rubber suction bulb, whisper “sksksksk,” count to 51, and pluck the bristles of a hairbrush. She carries out these tasks with extreme care, all the while narrating in a soft and gentle voice. If the video affects you as intended, you will experience pleasurable tingles and relaxation throughout.

This scenario may sound a bit obscure, but the Internet houses thousands of videos similar to the one described above. These videos are specifically designed to evoke a pleasurable and relaxing “tingling” sensation in viewers. Followers on YouTube, media publications, and forums refer to this phenomenon as Autonomous Sensory Meridian Response (ASMR) (Tufnell, 2012). Viewers describe the sensation as a distinct, pleasurable tingling that typically originates at the back of the scalp (Richard, 2014). Media articles describe the sensation as “bubbles in your head” (Cheadle, 2012), “like getting a scalp massage but on the inside” (Taylor, 2014), and “like your brain is melting in a good way” (Taylor, 2013).

These videos generally consist of actors (referred to as “ASMRtists”) who enact a variety of scenarios, ranging from tapping fingernails on glass, to sorting papers, to performing a mock cranial nerve examination. Media sources suggest that ASMRtists frequently utilize binaural recording technology for production of these videos (Tufnell, 2012) and encourage viewers to pay particular attention to sounds (Cheadle, 2012). Viewers often claim that it is necessary to wear headphones in order to experience the full effects of the videos (Higham, 2014). ASMR has recently amassed immense popularity in online communities; the top-grossing YouTube ASMR video has attracted over 43 million views², Facebook’s “ASMR community” has over

¹<https://www.youtube.com/watch?v=9T9DM5TiB4o>

² <https://www.youtube.com/watch?v=POtVaIEVDv4>

30,000 likes³ and the subreddit (/r/ASMR)⁴ has over 112,000 subscribers, as of November 2015.

Resulting from this mass popularity, ASMR has recently garnered attention from prominent news sources including The New York Times (Fairington, 2014), BBC (Higham 2014), Vice (Cheadle, 2012), The Huffington Post (Tufnell, 2012), and The Guardian (Taylor, 2013).

Although the phenomenon has only recently gained media prominence, the response is reportedly not new. Most people who experience ASMR claim that they first experienced the response as a child; these online communities have simply fostered a space for aficionados to assemble and share (Cheadle, 2012). Groups began forming around the idea of an “Attention Induced Head Orgasm” in the late 2000’s, notably with the 2008 development of the Yahoo group, “The Society of Sensationalists” (Taylor, 2014). The formal term Autonomous Sensory Meridian Response was eventually coined by Jenn Allen, the founder of an ASMR website (Cheadle, 2012).

Even with all of this recent media attention, very little is known about the cause and nature of the response. We know of only one peer-reviewed study addressing the phenomenon: an online exploratory survey which recruited self-identified ASMR experts from online forums (Barrat & Davis, 2015). The survey results align with the online literature, suggesting that the sensation entails a tingling sensation that originates at the back of the neck and head. The survey also suggests that certain triggers are more likely to induce the response than others (Barratt & Davis, 2015). This reported tingling, shiver response seems to share similarities with musically-induced shivers (frisson), particularly with regard to the physical sensations associated with the response as well as the enjoyable, relaxing effects (Huron & Margulis, 2010). Some sources, however, claim that ASMR is caused by different stimuli than frisson and feels entirely different (Higham, 2014). Ultimately, further research is needed in order to reach any conclusions.

ASMR seems to have both physiological and psychological effects, and developing a deeper understanding of ASMR causation and response may help to better understand

³ <https://www.facebook.com/ASMRofficial/?fref=ts>

⁴ <https://www.reddit.com/r/asmr>

mechanisms through which auditory elements affect physiology and emotion. Understanding ASMR may potentially provide further support for current standing theories about frisson, or provide insight into mechanisms responsible for auditory-induced pleasure and relaxation. With so little background research available, we found it most appropriate to begin our investigation of ASMR through an exploratory study. Foremost, we sought to construct a general characterization of this phenomenon, both with regard to the stimuli and viewer experience.

We will present two studies. In the first study, we aim to gather a characterization of the video content. For the second study, we aim to gather a general characterization of the ASMR experience for viewers. As this study will be primarily exploratory in nature, we will have no *a priori* hypotheses; rather, we plan to use these analyses to glean a general characterization of ASMR videos and common themes of viewer experience.

Study 1: Content Analysis

Through this study, we aim to characterize the qualities of stimuli which evoke ASMR. To do this, we systematically analyzed ASMR videos alongside control videos which do not typically induce the response in viewers. To perform this video analysis, we carried out a formal sampling procedure on YouTube, collecting both ASMR videos and control videos. We then followed an *a priori* method for analyzing the content of both the ASMR and control videos.

Procedure

To collect our sample of ASMR videos, we collected the 30 top-viewed videos resulting from the search term “ASMR.” We utilized private browsing in order to minimize the confounding effects of account history and marketing profiles on the search.

In this online community, certain ASMRtists are more prominent and have substantially more subscribers than others. In order to diversify our sample beyond the few most popular ASMRtists, we *a priori* determined to include a maximum of three videos per ASMRtist. It is also noteworthy that the ASMR community extends beyond English speaking countries. For this

reason, we determined to limit our sample to videos produced in English as a control.

Additionally, some videos about ASMR are explanatory in nature and aim to educate the viewer about ASMR rather than induce the response. As such, we *a priori* determined to exclude videos explaining ASMR from the sample. We also explicitly excluded any ASMR parodies and videos consisting of solely a still image overlaid with audio.

Overall, our sample included 30 videos from 18 distinct producers. 25 of the videos featured only females, two featured only males, and one video featured both a female and a male. Two of the videos had no discernable actors. Additionally, seven videos in our sample were produced by non-native English speakers. Three of the videos included a Russian-accented speaker, two included a British-accented speaker, and two included an Australian-accented speaker. The entire video sample, with video makers and links, is available in Appendix 2.

In order to determine the unique factors of stimuli which induce ASMR, we must compare these with videos that do not elicit the response. As YouTube videos range so broadly in terms of content and purpose, we were initially uncertain what constituted an appropriate control group. We subsequently determined to include two different control conditions.

We first assembled the “General control” group, which consisted of YouTube videos matched to the ASMR sample videos for date-posted and view-count. We initially aimed to generate this control group solely by matching the videos by date posted and view count. However, the YouTube search engine requires some search term in order to generate a search. In order to minimize unwanted bias, we utilized six low-content words as search terms: “the,” “an,” “with,” “and,” “for,” and “from.” We used each term to collect five videos, resulting in 30 videos in total. We generated this control group by searching with each of these search terms and organizing the results by date-posted. We collected videos which nearest matched the ASMR videos for post-date and view count. Our search returned an unexpectedly high number of music

videos and because ASMR videos generally lack music, we determined to exclude these as controls.

As these “General” YouTube videos range so broadly in terms of content, we thought it appropriate to include a second control group which more closely matched the agency of the ASMR videos. As noted in media coverage, ASMR videos generally contain an actor or two directly addressing the viewer of the video (Cheadle, 2012). This agency is similar to tutorial videos, where an actor usually directly addresses the viewer of the video, providing a description of how to perform a certain task. Accordingly, we utilized tutorial videos for sampling our second control group, the “Talking-head control.”

In order to generate this sample, we searched YouTube with the search-term “tutorial” and sorted the results by popularity. We then selected each “Talking-head control” video by matching it to an ASMR video for the same number of actors in the video. We also matched the same proportion of male and female actors in each video. For example, if the ASMR video contained one male and one female, we found a tutorial video with one male and one female. Additionally, because ASMR videos rarely contain music, we excluded any tutorials from the sample with prominent background music.

For this study, we have devised an *a priori* methodology for analyzing the content of these videos. In order to select our measures for comparison, we began by referencing online media. We looked at news articles as well as blog posts to develop an idea of what viewers perceive to be significant aspects of the videos. Our sources suggested that the ASMRtists themselves are crucial to the ASMR experience, so we included several measures that describe the actor (Richard, 2014). There were also several reports that the topical content and setting of the videos strongly influence the effectiveness of the videos (Cheadle, 2012). As such, we included measures which capture aspects of the content and setting of the videos. We also conducted an interview with a self-identified ASMR aficionado. A synopsis of this interview is

available in Appendix 1. This interview further emphasized that certain qualities of the ASMRtist are crucial to the experience. This interview also highlighted several necessities of auditory stimuli that produce ASMR. With this, we included measures in our content analysis which describe the actor and audio. Additionally, as ASMR potentially shares similarities with frisson, we included measures which capture known triggers of frisson. Frisson literature provides evidence that certain auditory elements play a vital role in triggering the frisson response in viewers (Huron & Margulis, 2010). Frisson is often induced by acoustic correlates such as rapid and large increases in volume, broadening of the range of frequency, or entry of new instruments (Panksepp, 1995). As such, we included several measures which capture these auditory elements.

Ultimately, we determined to analyze the video content with regard to four major areas: the person, the speech/audio, the topical content, and the setting. Table 1 details the protocol for collecting each measure. Except where noted, each of the measures were taken from a randomly generated 60-second sample. The randomization procedure ensured that all portions of the video were equally likely to be selected. Additionally, it is very common for camera angles to zoom, pan, or change throughout a video sample. Accordingly, coding was only done for the first scene and camera angle presented in the 60-second excerpt.

Speech and audio samples where noted were shortened to between 5-10 seconds for purposes of audio analysis using the speech analysis software, Praat (Boersma, 2001). Furthermore, many speech samples throughout these clips were obscured by prominent background noises or music. For this reason, we selected the first unobscured segment throughout the sample. If the 60-second excerpt lacked unobscured speech, we continued sampling the video until we identified unmasked speech. If the video entirely lacked speech, this fact was coded accordingly.

Table 1.
Detailed protocol for content analysis.

Measure	Coding procedure
<i><u>The Person</u></i>	
1. Face Time	The proportion of time in the video sample in which a person's face is visible in the frame.
2. Hands Time	The proportion of time in the video sample in which a person's hands are visible in the frame.
3. Actors	The maximum number of people present in the video sample.
4. Sex	The sex of the actors in the videos, encoded as the proportion of "maleness" in each video.
5. Age	The average age of the actors in the video sample.
6. Face frame	The vertical proportion of the frame occupied by a face (when present).
7. Lighting level	A subjective rating between dark "1" and bright "5".
8. Face forward	Proportion of the time in which the face is directly facing the camera.
9. Eye contact	Proportion of the sampled time in which eye contact is made with the camera.
10. Makeup	Presence of makeup (subjective rating from none "1" to heavy makeup "5").
11. Dress	Style of dress (subjective rating from intimate "1" to professional "5").
12. Smiling	Proportion of the sampled time in which the person is smiling.
<i><u>Speech and Audio</u></i>	
13. Mic visibility	Whether or not the microphone is visible.
14. Vocal energy	Subjective rating of vocal energy (whispering "1" to shouting "5").
15. Oral wetness	Subjective impression of oral wetness (dry mouth "1" to wet mouth "5").
16. Syllable rate	Both the number of words and syllables was counted over a 15-second sample. The syllable rate was used as a measure of speaking rate.
17. Word complexity	The average number of syllables per word in the sampled sequence was used as an index of the technical sophistication of the speech.
18. Loudness non-speech	The loudness of nonspeech sounds over a 60-second sample (quiet "1" to loud "5").
19. Proportion non-speech	Proportion of non-speech sounds over a 60-second sample.
20. Audio roaming	Subjective impression of the amount of movement for the sound sources (no movement "1" to high movement "5").
21. Dorsal sound	Subjective impression of the occurrence of sound behind the listener (no dorsal sound "1" to frequent dorsal sound "5").
22. Proximity	Average estimated distance between microphone and speaker (in feet).
23. Sound pointing	Drawing attention to sounds (no attention "1" to explicit frequent attention "5").
24. Voicing	Proportion of a random 5-10 second excerpt when the voice is sounding (proportion of pulse time measured using Praat).
25. Pitch	Average pitch of the voice over the same random 5-10 second excerpt. (F0 from Praat).

26. Pitch variance	Average pitch excursion (or F0 variance) over the same random 5-10 second excerpt.
27. Music	Subjective impression of the proportion of music (no music “1” to consistent music “5”).
<u>Topical Content</u>	
28. Activity intimacy	Judgment of the intimacy of the activity (low intimacy "1" to high intimacy "5"),
29. Singular self reference	Count of the number of occurrences of single first-person words <i>I, me, my, mine</i> .
30. Plural self reference	Count of the number of occurrences of plural first-person words <i>we, us, our, ours</i> .
31. Observer reference	Count of the number of occurrences second-person words <i>you, your, yours</i> when addressed to the camera (as opposed to a second actor).
<u>Setting</u>	
32. Frame size	An estimate of the physical distance between the top and bottom of the picture (feet).
33. Location 1	Indoor versus outdoor (scale of 1 "indoor" to 5 "outdoor").
34. Location 2	Domestic versus professional setting (scale of 1 "domestic" to 5 "professional").
35. Location 3	Private versus public setting (scale of 1 "private" to 5 "public").

Results

We utilized ANOVA to determine initial differences in means and Tukey HSD post-hoc tests to determine specific differences between the ASMR videos and each of the control groups. We have listed the numerical results of the content analysis in Table 2. In Table 2, we have provided the means for each of the categories regarding the ASMR videos, the General control videos, and the Talking-head control videos. We have also provided the standard error for each, as well as the p-values indicating the significance of differences between the ASMR videos and each of the control groups. For each measure which displayed significant difference between the ASMR videos and at least one of the control groups, we have provided graphs in Figure 1 to better visualize effect sizes.

Most notably, our analysis identified several measures in which ASMR videos differed significantly from both controls. Compared with both the “General control” videos and the “Talking-head control” videos, ASMR videos exhibit significantly more oral wetness cues, audio roaming, dorsal sound, and intimacy, but decreased vocal energy, syllable-rate, loudness of non-speech sounds, and voicing.

Our analysis also indicated several measures with differences between the ASMR videos and only one of the control groups. Compared to the “General control,” ASMR videos exhibited a lower number of actors, lower average age of actors, less music, and decreased frame-size. The videos also showed a greater proportion of female actors, greater proportion of the frame occupied by the actor’s face, increased proximity, and increased make-up. The videos also showed an increased tendency to be indoors versus outdoors and more tendency to be in a private setting as compared to a public setting. In comparison to the “Talking-head control” videos, the ASMR videos showed increased formality of attire and increased word-complexity, but decreased proportion of non-speech sounds and decreased number of singular self-references.

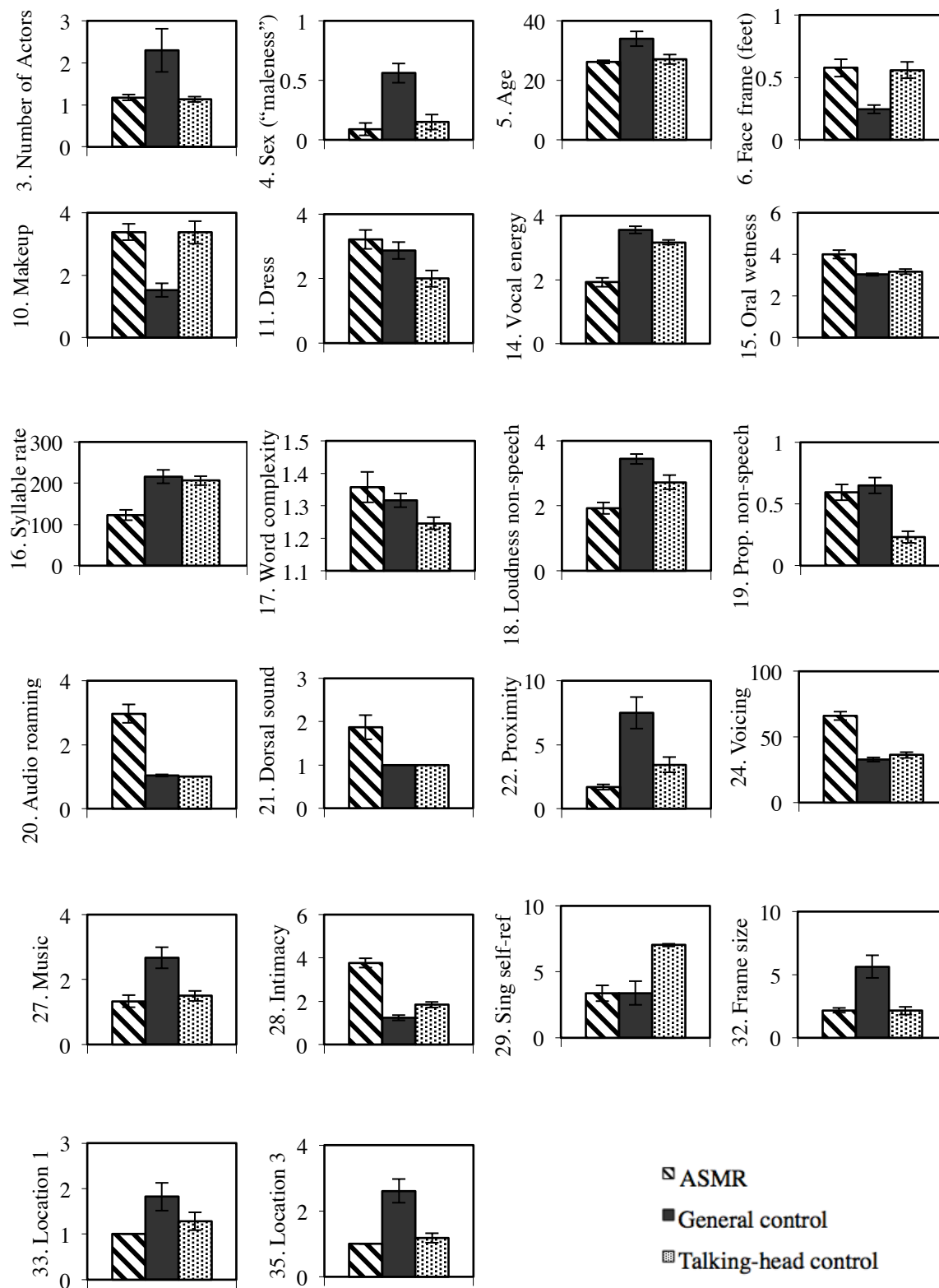
The data indicated no statistically significant differences for ASMR videos with regard to the amount of face time, the amount of hands time, the level of lighting, the amount of time the actor faces forward, the amount of eye-contact, the amount of smiling, the frequency of sound-pointing, microphone visibility, pitch of voice, the variance of the pitch of the voice, the number of plural self-references, the number of references to the observer, and the tendency to be in a domestic or professional setting.

Some of the measures we collected were subjectively rated on a scale of 1-5. We verified these more subjective measures by calculating inter-rater reliability. A second rater, unrelated to the study and uninformed of the project’s objectives, independently rated each subjective measure (including lighting level, makeup, style of dress, vocal energy, oral wetness, loudness of non-speech sounds, audio roaming, dorsal sound, intimacy, presence of music, location 1, location 2, and location 3). Correlation between raters was verified by calculating a Kappa correlation across all the measures. The interrater reliability between subjects was found to be $Kappa=0.466$ ($p<0.0001$), indicating moderate correlation across ratings.

Table 2. *Results of Study 1 content analysis. The table lists the means for each measure as well as the standard error of the means. The table additionally lists p-values identifying significant differences between General control videos and ASMR videos, and Talking-head control videos and ASMR videos.*

Category	ASMR	General control		Talking-head control	
	<i>M (SEM)</i>	<i>M (SEM)</i>	<i>p</i>	<i>M (SEM)</i>	<i>p</i>
<u>The Person</u>					
Face Time	0.86 (0.07)	0.84 (0.05)	0.97	0.82 (0.07)	0.88
Hands time	0.48 (0.08)	0.63 (0.06)	0.26	0.63 (0.06)	0.26
Actors	1.17(0.07)	2.30 (0.52)	0.03	1.13 (0.06)	1.00
Sex	1.09 (0.05)	1.56 (0.08)	<0.01	1.15 (0.06)	0.79
Age	26.20 (0.49)	33.95 (2.50)	0.01	27.11 (1.61)	0.93
Face Frame	0.58 (0.07)	0.25 (0.03)	<0.01	0.56 (0.07)	0.98
Lighting	2.83 (0.14)	3.07 (0.17)	0.57	3.00 (0.17)	0.75
Face Forward	0.65 (0.08)	0.40 (0.07)	0.07	0.70 (0.07)	0.89
Eye Contact	0.31 (0.05)	0.14 (0.05)	0.08	0.25 (0.06)	0.71
Makeup	3.38 (0.26)	1.52 (0.22)	<0.01	3.37 (0.36)	1.00
Dress	3.22 (0.29)	2.87 (0.26)	0.63	2.00 (0.25)	0.01
Smiling	0.08 (0.02)	0.15 (0.04)	0.24	0.07 (0.02)	0.97
<u>Speech and Audio</u>					
Mic Visibility	0.07 (0.05)	0.20 (0.07)	0.16	0.00 (0.00)	0.62
Vocal Energy	1.92 (0.14)	3.56 (0.11)	<0.01	3.17 (0.07)	<0.01
Oral Wetness	4.00 (0.20)	3.04 (0.06)	<0.01	3.17 (0.12)	<0.01
Syllable Rate	122.81 (12.57)	216.00 (16.23)	<0.01	206.27 (11.34)	<0.01
Word complexity	1.36 (0.05)	1.32 (0.02)	0.64	1.25 (0.02)	0.03
Loudness non-speech	1.93 (0.18)	3.44 (0.15)	<0.01	2.73 (0.22)	0.01
Prop non-speech	0.59 (0.07)	0.65 (0.06)	0.79	0.23 (0.05)	<0.01
Audio Roaming	2.97 (0.29)	1.03 (0.03)	<0.01	1.00 (0.00)	<0.01
Dorsal Sound	1.87 (0.28)	1.00 (0.00)	<0.01	1.00 (0.00)	<0.01
Proximity	1.68 (0.20)	7.50 (1.24)	<0.01	3.43 (0.59)	0.29
Sound Pointing	1.30 (0.16)	1.00 (0.00)	0.06	1.00 (0.00)	0.06
Voicing	66.09 (3.26)	32.81 (1.78)	<0.01	36.27 (2.32)	<0.01
Pitch	2.34 (0.04)	2.29 (0.03)	0.52	2.32 (0.02)	0.80
Pitch Variance	0.10 (0.01)	0.11 (0.01)	0.93	0.10 (0.00)	1.00
Music	1.33 (0.19)	2.67 (0.33)	<0.01	1.50 (0.26)	0.87
<u>Topical Content</u>					
Intimacy	3.77 (0.21)	1.23 (0.12)	<0.01	1.83 (0.13)	<0.01
Sing. Self-Ref.	3.38 (0.60)	3.38 (0.90)	1.00	7.03 (1.09)	0.02
Plur. Self-Ref.	0.71 (0.22)	1.37 (0.40)	0.51	2.03 (0.49)	0.06
Obs. Ref.	3.00 (0.53)	1.58 (0.51)	0.36	5.00 (0.91)	0.12
<u>Setting</u>					
Frame Size	2.17 (0.19)	5.63 (0.89)	<0.01	2.15 (0.31)	1.00
Loc1	1.00 (0.00)	1.82 (0.30)	0.02	1.29 (0.20)	0.58
Loc2	2.47 (0.31)	2.64 (0.29)	0.89	2.07 (0.21)	0.56
Loc3	1.00 (0.00)	2.61 (0.36)	<0.01	1.18 (0.15)	0.83

Figure 1. Graphical representation of measures from the video content analysis with significant p -values. Each graph compares mean values for the ASMR videos, General control videos, and Talking-head control videos. Error bars represent standard error for each mean. The associated number corresponds with measure number from Table 1, which details how the measure was collected.



Discussion

This study highlights several common themes in ASMR stimuli. Many of the results suggest that heightened proximity and intimacy may be integral in inducing ASMR. For example, decreased frame size, increased face frame, and increased proximity in the ASMR videos all suggest heightened proximity. Additionally, fewer actors, increased proximity, tendency to be in indoors in private settings, and increased subjective impression of intimacy all suggest that intimacy may be essential in inducing the response.

Relaxation, quiet, and movement also seem to be prominent themes throughout these results. Decreased syllable rate and decreased voicing both suggest relaxation. Additionally, oral wetness cues signal parasympathetic activation, further emphasizing relaxation (Eneroth et al., 1969). Quiet also seems to be a recurring theme throughout these measures. For example, decreased vocal energy, decreased loudness of non-speech sounds, and decreased proportion of non-speech sounds all suggest quiet. Additionally, decreased voicing suggests that the speaker may be spending more time pausing or whispering, further suggesting quiet. Interestingly, this quiet highlights a vital difference between stimuli which induce ASMR and stimuli which induce frisson. Our results suggest that quiet is common in ASMR stimuli, whereas frisson is commonly triggered by high volume noises and crescendo (Panksepp, 1995). Several measures also suggest that movement may be significant in inducing ASMR. Our results indicated both increased audio roaming and increased dorsal sound, which both suggest moving audio.

Ultimately, this study suggests that elements such as proximity, intimacy, relaxation, quiet, and movement may be integral in triggering ASMR. However, as this was just an exploratory investigation, it is also important to remember that these elements may also simply represent conventions of online ASMR production. Active manipulation of these variables through future studies may further verify these findings.

Study 2: Response Analysis

In establishing a characterization of ASMR, it is also critical to assess viewers' responses to the videos. Our second study aims to glean a better understanding of the response itself. In order to gain insight into viewer response to these videos, we looked to online commentary on both YouTube videos and the Reddit discussion, /r/ASMR⁵. We were interested particularly in commentary which conveyed any information regarding physiological response, presumed cause, psychological response, and function of the ASMR videos. Specifically, we desired comments explaining physical symptoms, precipitating stimuli, psychological outcomes, and functional usage of the ASMR videos.

Procedure

We examined the commentary on the same 30 videos used in the ASMR video sample of Study 1. For each of the 30 videos, we collected the most popular 100 comments, collecting a total of 3,000 YouTube comments. We also collected commentary from each of the 30 videos' description blurbs. We additionally examined commentary on the ASMR subreddit /r/ASMR. Reddit threads tend to be shorter than YouTube threads, so we analyzed the "best" 20 comments from the top 30 threads. We first collected primary comments, but if there were fewer than 20 primary comments, we also collected the first child comment below each primary comment. We first collected from the 25 all time top videos, then top videos from this past year. We also included the forum "rules" and guidelines in our commentary analysis. Like with YouTube, we excluded discussions of parodies, and we also excluded logistical posts discussing how to moderate the forum.

We recognize that limitations exist in drawing distinct conclusions from web commentary. Web comments tend to encourage further responses, often directly reinforcing or disputing the original comment. However, by sorting the comments by popularity rather than date posted, we attempted to address this limitation. Additionally, web commentary may not be

⁵ <https://www.reddit.com/r/asmr>

the most accountable form of information about a viewer's experience. People may share entirely random commentary or even joking commentary for their own entertainment. In order to address this limitation, raters simply discarded any information that seemed irrelevant. These caveats notwithstanding, we nevertheless aimed to identify common themes throughout the ASMR experience.

In total, we assembled 3,600 comments for our commentary analysis as well as 30 video descriptions and the Reddit guidelines. We utilized the De Munck pile sort methodology to sort the comments, a common method utilized in anthropological data collection (De Munck, 2009). The De Munck pile sort methodology traditionally entails printing each comment on a slip of paper and sorting the papers into a few pre-determined categories. After this original sort, the original categories are then further divided into sub-categories as sorters see fit, and a final aggregate set of categories is compiled.

For our study, we performed this entire sorting process electronically. We established five groups for our initial sort: (1) physiological response (a comment relating to a bodily condition), (2) presumed cause (a comment identifying the cause of some response), (3) psychological response (description of a psychological or emotional state), (4) function (description of a functional use of the videos), and (5) interesting (otherwise seemingly noteworthy comments). If a comment was irrelevant to any of these categories, it was discarded. If a comment contained information relating to more than one of the categories, it was copied and added to both. This entire methodology was completed by one experimenter (E1) and repeated entirely by a second experimenter (E2) unaffiliated with the project and blind to the purpose of the study.

After sorting into the five preliminary categories, each experimenter went through and then subdivided each category into further sub-categories as seemed appropriate. After these independent pile sorts, an aggregate set of categories was then compiled. We have included the

aggregate set of categories below in Tables 3-7, with a notation for how many comments were included in each category by E1 and E2, as well an example comments from each category.

Results

After preliminary sorting, a significant proportion of the comments (1,331[E1]/1,016[E2]) were deemed irrelevant and discarded. According to the *a priori* categories, 260/290 comments related to physiological response, 968/690 comments related to presumed cause, 1,375/1,819 comments related to psychological response, 174/224 related to function, and 229/411 were tagged as otherwise interesting. This commentary analysis yielded a wide variety of results, and we found that ASMR usage may vary broadly from viewer to viewer. The analysis yielded a wide variety of physiological responses, triggers, psychological reactions, and functional reasons for watching ASMR videos. However, this analysis also indicated commonly repeated themes throughout viewer usage and response.

By far the most frequent comments regarding physiological response indicated a localized tingling sensation. There was also some mention of shivers, chills, and goosebumps. Comments also occasionally indicated a tickling sensation, sexual arousal, muscle relaxation, and actually physically feeling the sensations being acted out by the ASMRtist through role-play.

Comments about the presumed cause indicated that visual and audio triggers for ASMR vary depending on individual preferences. Commonly mentioned audio triggers were the artist's voice, certain spoken sounds (sk, tsk, ch, tk, etc.), brushing, whispers, tapping, soft speaking, mouth noises (e.g. chewing), paper noises, water noises, buzzing noises, breathing, fabric noises, clicking, scratching, and glass. Viewers also noted that they prefer certain conditions to watch the videos. For example, viewers prefer high quality audio, binaural sound, and high quality video production. Viewers also noted a preference for attractive artists and a preference for female artists. They often indicated that role-play, slow movements, and certain visuals serve as triggers. Many viewers specifically noted that an artist speaking too quickly detracts from the

experience. Some viewers also noted that too much noise detracts from the experience, but the videos should not be so quiet that viewers cannot hear what's happening. Some viewers also noted that they experience ASMR in real life situations such as having their hair touched or getting a haircut. Some viewers noted an explicit preference for intentionally created triggers or unintentionally created triggers.

Comments related to psychological effects indicated that not all people experience ASMR. Interestingly, comments indicate that viewers have mixed reactions to ASMR videos. A majority of viewers really enjoy the experience. Most commonly, they noted that they find it overall pleasurable, calming, comforting, relaxing, drug-like, and to induce childhood nostalgia. These viewers frequently expressed gratitude for the videos and love and admiration for the artists. On the other hand, some viewers indicated that they find ASMR very unpleasant, strange, and to induce anxiety. Many people expressed that it did not work for them. Viewers expressed confusion, anxiety, and being "creeped out" by the videos. A large portion of commenters noted that they particularly hate the noises in the videos and that they induce misophonia and anxiety.

Functional comments noted that viewers often use the videos to fall asleep or to aid with insomnia. Several viewers explicitly claimed that ASMR helps them with sickness, pain, and muscle relaxation. Viewers also commonly noted using the videos to relax and aid with anxiety. Further accounts additionally noted using these videos for the same effects with their children. Several viewers mentioned using ASMR videos to pass time, such as while doing work.

The other "interesting" comments highlighted the extent to which viewers watch ASMR videos. There were many requests for new videos. There were also many indications of frequent, repeated views of the same video. Viewers also noted that they enjoy the sense of community they experience through the online forums, groups, and videos. Interestingly, some viewers noted that they feel an addiction to these videos and even that they have developed a sort of tolerance and can no longer experience the sensation. Some viewers also indicated that they enjoy utilizing

ASMR stimuli alongside other drugs (particularly marijuana). Additionally, several viewers noted that they have Asperger's Syndrome and believe that there may be a link between Asperger's and experiencing ASMR.

Table 3.
Study 2 categories which relate to Physiological Response.

Physiological Response			
Label	E1	E2	Example comment
Tingling	163	145	<i>major tingles all the way to my hands</i>
Localized response	59	61	<i>Normally I always get tingles in the back of my neck and my spine, this is the first time getting them in the top of my head</i>
Sexual arousal	7	38	<i>I'm getting a tingling sensation in my balls.</i>
Shivers/chills	11	8	<i>Her voice gives me chills</i>
Goosebumps/cold	8	8	<i>I started to get goosebumps</i>
Tickling	2	5	<i>your voice and the glass sounds make my spine tickle</i>
Relaxed muscles	1	5	<i>i cold feel the muscles in my back loosen</i>
Actually feeling the sensations	0	6	<i>Omg did anyone else feel her breath go through ur earphones?!</i>
Smelling things	0	6	<i>Never has it happened before, but I actually smelt herbs. What is this sorcery?</i>
Feel sick	2	3	<i>For some weird reason I started feeling nauseous</i>
Sweating	2	1	<i>This is so weird, my palms are sweating and my shoulders are tingling</i>
Vibrations	2	0	<i>I could feel the vibrations all over my head, that's so awesome!!</i>
Eyes watering	1	1	<i>while I was hearing that brush sound my eyes started watering like crazy</i>
Stomach drop	0	1	<i>I dont get tingles, my stomach just has a slight drop feeling like on a swing.</i>
Pain	0	1	<i>For some reason this hurts my nose</i>
Weak knees	1	0	<i>these sounds to make my knees feel weak</i>
Teeth	1	0	<i>Is it normal that I get freeky feelings in my teeth?</i>
Pins and needles	0	1	<i>I was just getting pins and needles.</i>

Table 4.
Study 2 categories which relate to Presumed Cause.

Presumed Cause			
Label	E1	E2	Example comment
Voice (general)	103	122	<i>Your voice is just so beautiful, it lulls me off to sleep.</i>
Didn't work	0	121	<i>I have some questions because it didn't work for me.</i>
Detracting aspect	0	88	<i>I do like your voice however i think you talk too quickly for it to be relaxing. You sound rushed.</i>
Physically attractive person	87	0	<i>wow you're beautiful.</i>
Certain spoken sounds (sk, ch, ts, tk)	40	23	<i>I really liked the sksksk, idk why but it makes my ears feel so good!! Thanks for the video</i>
Brushing	32	24	<i>Love the sound of the brushing.</i>
High quality sound (binaural, headphones)	43	13	<i>God Bless 3d Mics</i>
Buzzing/electric noises (white noise)	25	28	<i>it's good to know that there are a lot of crazy people like me who love the hair dryer sounds and other vacuuming sounds to get some sleep</i>
Whispers	28	22	<i>Your whispering definitely sends triggers down my spine and I hadn't even begun the full video.</i>
Tapping	27	19	<i>Some triggers are insanely effective (finger tapping imo).</i>
Role Play	37	8	<i>Best ASMR spa role play... thank you</i>
Too much talking is bad	44	0	<i>are there any videos with more sounds and not so much talking? As soon as I begin appreciating the tapping, bristles, etc....a voice interrupts it and the purpose is lost</i>

Visuals (general)	13	29	<i>The lighting and background for this was perfect</i>
Sounds (general)	33	9	<i>Oh I love them sounds you make I find them relaxing.</i>
Water noises	20	15	<i>I really enjoyed all of these sounds. The spray bottle especially...</i>
Too loud is bad	12	23	<i>I loved the sounds, but for my taste the background noise was relatively loud.</i>
Paper noises (writing, cutting, crinkling)	22	12	<i>I found my trigger within the first few mins.. that paper, wow!</i>
Non-American accent	31	0	<i>I love your accent, I'm jealous.</i>
Ads are bad	29	0	<i>Loud ads should be banned on ASMR videos</i>
Watching a certain person	16	13	<i>Maybe I'm too used to gentle whispering that I don't like any other Asmr</i>
Mouth noises (eating, chewing)	17	12	<i>I go tingle crazy when someone smacks their lips when they talk.. strange.</i>
Hair or face touching in real life	14	13	<i>I thought I was the only one totally addicted to other people touching my hair lol</i>
Playing with hair	26	0	<i>I could watch you braid hair all day, it's so relaxing!</i>
High quality videos	24	0	<i>couldnt fall asleep with this video because i was just so fascinated by the special effects</i>
Eyes	21	0	<i>Your eyes are hypnotizing. Feel like youre actually looking at me through the phone</i>
Specific viewing conditions	21	0	<i>I use Screen Dimmer on my Android. Love it.</i>
Creative/intellectually stimulating	19	0	<i>This is my favorite ASMR video on YT, it's so imaginative and clever with the ideas you referenced.</i>
Music	12	7	<i>please do more music / soft voice/whispering vids. I literally cannot get enough! They make me so happy! :)</i>
Hands	8	10	<i>The best Asmr video ever ☐ I loved the hand brushing!</i>
Bob Ross	17	0	<i>Bob Ross used to set my ASMR off back before I had any idea what it was.</i>
Watching playing with ears	12	4	<i>the ear massage really helped me relax, more of the same sound please!!!</i>
Feathers	8	7	<i>The feathers are AMAZING</i>
Gentle, slow movements	15	0	<i>Tap slower please it feels rushed</i>
Soft Speaking	15	0	<i>This was great! It gave me brain tingles! I love the soft way you talk</i>
Clicking	9	6	<i>I like the sound of a computer mouse clicking</i>
Scratching	6	5	<i>I think my trigger was the book scratching!</i>
Birds	4	7	<i>I like the bird sounds in the background.</i>
Sound problems	0	11	<i>Please speak louder, i can't understand anything.</i>
Too fast is bad	0	10	<i>I felt agitated when you kinda rushed it</i>
Too quiet is bad	9	0	<i>Please speak louder, i can't understand anything.</i>
Glass	0	9	<i>The glass tapping was beautiful and sprung my trigger of tinglieness</i>
Breathing (and blowing)	5	4	<i>Best asmr video in YouTube. The whispering and the breathing in the ear kills me right away</i>
Artist's mouth or smile	8	0	<i>the sounds in this vid are good but I get the tingles from your smile also</i>
Unintentional	8	0	<i>I watching unboxing videos. Unintentional ASMR is the most intense for me.</i>
Close proximity	7	0	<i>I loved that you came close to the screen</i>
Harsh sounds (rustling, crunching)	0	6	<i>Please do turning a page slowly and noisily</i>
Movement	6	0	<i>my trigger seems to be book scratching...or most calm hand movements.</i>
Fabric noises	6	0	<i>and the shirt you wore for this was the icing on the cake, such good soft crinkles.</i>
Intentional	5	0	<i>I usually can't stand intentional videos but this was FANTASTIC.</i>
Only visual triggers	4	0	<i>Am I the only one who watches this video with the sound off?</i>
Smoke/Steam	4	0	<i>Love that steam!</i>
Smells	3	1	<i>I was surprised that I got tingles from the lavender</i>
Only females	3	0	<i>for some reason only Asmr videos by girls relaxes me... is this normal?</i>
Instructional simple task	2	0	<i>Watching other people performing simple tasks</i>

Table 5.
Study 2 categories which relate to Psychological Response.

Psychological Response			
Category Label	E1	E2	Example comment
General positive reaction	456	400	<i>My all-time favorite ASMR video.</i>
Love/admiration for the artist	119	427	<i>She is just amazing!</i>
Calm/relaxation	198	248	<i>Most relaxing thing ever:)</i>
Gratitude	121	251	<i>Thank you for doing these they help so much!</i>
Sleepy	100	95	<i>i fell asleep when waching this</i>
Confusion	48	103	<i>what is this stuff? I don't get it...</i>
Weird/creepy	68	83	<i>I feel violated and creeped out.</i>
Favorite ASMR	0	102	<i>My all-time favorite ASMR video.</i>
Can't get it to work	48	0	<i>ASMR doesn't work for me</i>
Nostalgia	9	35	<i>it reminds me my childhood.</i>
Comforted/cared for	26	11	<i>You make feel so cozy and comforted with this, thank you.</i>
Misophonia/irritation	34	9	<i>I HATE and I mean HATE the sound of the lips and breathing you make when you whisper etc. This is ear rape for me.</i>
Sexual	36	0	<i>This does sound so sexual.</i>
Anxious/scared	29	0	<i>ASMR is supposed to be relaxing? It gives me a heart attack</i>
Laughter	28	0	<i>LOL! I laughed out loud.</i>
Drug like	0	21	<i>this is my kind of getting high and relaxing...</i>
Feel like its real	20	0	<i>The latex gloves one is like having someone put their fingers in your ears</i>
Hate interruptions	0	17	<i>I hate it how you go to listen to an ASMR video, and then some ad comes on with music loud enough to burst your eardrums.</i>
Surprise	0	17	<i>Wow! sksksksk took me by surprise... LOVED it!</i>
Happiness that more people experience it	13	0	<i>OMG I now know that I have ASMR!!! THANK YOU!!!! GREAT TO BE PART OF THE COMMUNITY</i>
Ease anxiety	10	0	<i>I was having some anxiety but this video definitely calmed me down and helped</i>
Crazy	9	0	<i>it's good to know that there are a lot of crazy people like me who love the hair dryer sounds and other vacuuming sounds to get some sleep</i>

Table 6.
Study 2 categories which relate to Function.

Function			
Label	E1	E2	Example comment
Sleep	79	118	<i>I usually listen to MassageASMR before bed.</i>
Easy anxiety	25	29	<i>I have horrible anxiety and your videos always calm me down. Thank you so much.</i>
Relax/Unwind	14	36	<i>My go-to relaxation video</i>
While doing Work	16	15	<i>I'm doing some boring paperwork right now and this video is helping me so much!</i>
Ease pain/sickness	15	15	<i>Thank you for this video. I listen and watch this at night when I am in pain and can't sleep. It relaxes me enough to ease my fibromyalgia.</i>
Insomnia	15	0	<i>This video has cured my problem with not being able to sleep at night. THANK YOU.</i>
For children	7	8	<i>This has relaxed my 6 month old since birth. Thanks!</i>
Relax muscles	3	0	<i>I think it's honestly helped with tension in my shoulders!</i>
When sad	0	3	<i>When I'm feeling down or just need to relax (i.e. now,when I have a fever) I watch or rather listen to this video.</i>

Table 7.
Study 2 categories which were otherwise interesting.

Interesting			
Label	E1	E2	Example comment
Requests	65	149	<i>I have a request. Could you please do whispering while painting your nails? Thanks!</i>
Frequent usage	45	166	<i>I love this vid, can't stop watching it</i>
Theories	15	50	<i>to me they are emotion strings they trigger parts of life that where maybe left out that you longed for</i>
First ASMR ever seen	0	37	<i>Oohh this is my very first AMSR video! Thanks you sooooo much</i>
Extreme love for the artist	30	0	<i>i want to marry this girl!!</i>
Addiction/tolerance	20	0	<i>Dude, I am so addicted to your videos that I'm getting resistant ASMR.</i>
Places in the world its listened to	19	0	<i>I am Korean. This is so nice! Thanks♥</i>
"Imagine" statements	12	0	<i>If you were to put a screamer at the end of a video.....</i>
Gender/sexuality theory	0	9	<i>The interesting thing about ASMR is the undoubtedly sexual element, whether that get s acknowledged or not</i>
Sense of community	8	0	<i>Hi! Nice to be a part of this community.</i>
With drug usage	8	0	<i>smoke weed and listen to ASMR =)</i>
Association with Asperger's	7	0	<i>Have Aspergers and am obsessed with ASMR. There is 100% a connection for me.</i>

Discussion

As this study was predominantly exploratory, there were no hypotheses to test or verify. However, this study provided quite a bit of insight into the most common viewer experience with regard to physiology, presumed cause, psychological response, and function, especially in relation to frisson. We gathered several comments with viewers directly reporting that frisson and ASMR are two distinct reactions. Many of our findings identify specific aspects of the two phenomena which differ. For example, frisson literature defines frisson as “a pleasant feeling associated with the flexing of hair follicles resulting in gooseflesh accompanied by a cold sensation, and sometimes producing a shiver,” predominantly identifying piloerection as the primary physiological response (Huron & Margulis, 2010). However, as indicated by Study 2, ASMR viewers seems to emphasize a tingling sensation, and many fewer people identify shivers and piloerection. Herein may lie the primary physiological difference between the two responses. However, this issue warrants further investigation before developing any distinct conclusions. Future studies may wish to actively manipulate stimuli to induce either frisson or ASMR in order to more distinctly characterize the differences in physiological reaction between the two. Quite a

few studies have tracked physiological correlates of frisson such as heart-rate, skin conductance, piloerection (Grewe et al. 2007), PET, and fMRI (Blood & Zatorre, 2001). Future studies may explore these same physiological correlates with ASMR in order to better characterize the physiological phenomena.

Comments about causation drew a fairly distinct contrast between ASMR and frisson. Whereas frisson is generally induced by crescendo and high volume noises (Huron & Margulis, 2010), comments indicated that ASMR is induced by low volume, slow, intimate noises. Many viewers in fact noted that the experience is ruined when there is too much noise or a loud interruption, such as an advertisement on YouTube. These findings further suggest that ASMR is a separate phenomenon from frisson.

Psychological comments also pointed to some interesting comparisons between ASMR and frisson. Like frisson (which only about 40% of people experience), it seems that not all people can experience ASMR (Huron & Margulis, 2010). Our study indicated that many viewers did not experience any sort of response from the ASMR videos. And while some people find ASMR highly pleasurable, others find it to be strange, uncomfortable, and even to induce anxiety. Misophonia was a frequent mention amongst the commentary. Misophonia is a recently acknowledged phenomenon in the psychiatric community, in which distinct noises induce substantial anxiety in certain individuals (Schröder et al., 2013). It is interesting to note that many triggers for misophonia are the same triggers which induce ASMR, notably mouth noises, eating, clicking, and tapping (Schröder et al., 2013). This overlap may be noteworthy, and future research may investigate this in more detail.

Finally, functional comments indicated that ASMR may have quite a bit of potential as a therapeutic tool in the future. ASMR fanatics claim the benefits of ASMR include relaxation, help with insomnia, and ease of anxiety. If the mechanisms of ASMR are more thoroughly understood, these fundamentals could be utilized in the future as additional tools for relaxation or

ease of anxiety. Ultimately, understanding ASMR may provide insight into general mechanisms by which auditory stimuli evoke pleasure and relaxation.

Conclusion

While our findings were predominantly exploratory and do not necessarily validate any conclusions about ASMR, they provide a good foundation for further investigation. As suggested by results of Study 1, elements such as proximity, intimacy, relaxation, quiet, and movement may all be directly implicated in inducing the response. While some of these results may simply represent conventions of ASMR production on the Internet, some may be directly involved in stimulating the response. Future studies may wish to actively manipulate each of these elements in order to examine their effects on the response.

Study 2 provided insights into understanding aspects of the response itself, notably the physiological response, psychological response, and therapeutic impact of ASMR in the online community. This study reinforced that ASMR is indeed distinct and the experience is similar for many viewers. This study also emphasized that ASMR is far-reaching and has great therapeutic potential. Future studies could investigate each of these aspects individually in more detail in order to develop a more thorough understanding of this phenomenon. This study has also identified comparisons between ASMR and other aurally-induced phenomena such as frisson and misophonia. As such, developing a more comprehensive understanding of ASMR may shed light on how auditory stimuli affect physiological response as well as psychological affect. Given the immense popularity of ASMR in the online community, further research could have great potential future implications.

References

- Barratt, E.L., and Davis, N.J. (2015). Autonomous sensory meridian response (ASMR): A flow-like mental state. *PeerJ*, Vol. 3, e851. <https://dx.doi.org/10.7717/peerj.851>
- Boersma, Paul (2001). Praat, a system for doing phonetics by computer. *Glott International* **5:9/10**, 341-345.
- Blood, A. J., & Zatorre, R. J. (2001). Intensely pleasurable responses to music correlate with activity in brain regions implicated in reward and emotion. *Proceedings of the National Academy of Sciences*, Vol. 98, pp. 11818-11823.
- Cheadle, H. (2012). ASMR, the good feeling no one can explain. *Vice*. Posted July 31, 2012. Accessed Oct. 31, 2014. <http://www.vice.com/read/asmr-the-good-feeling-no-one-can-explain>
- De Munck, V. (2009). *Research Design and Methods for Studying Cultures*. Plymouth, UK: AltaMira Press.
- Eneroth, C. M., Hokfelt, T., & Norberg, K. A. (January 01, 1969). The role of the parasympathetic and sympathetic innervation for the secretion of human parotid and submandibular glands. *Acta Oto-Laryngologica*, 68, 5, 369-75.
- Grewe, O., Nagel, F., Kopiez, R., & Altenmüller, E. (2007). Listening to music as a re-creative process: Physiological, psychological, and psychoacoustical correlates of chills and strong emotions. *Music Perception*, Vol. 24, 297-314.
- Higham, N. (2014). ASMR: The videos which claim to make their viewers ‘tingle’. *BBC*. Posted Dec. 11, 2014. Accessed Oct. 30, 2015. <http://www.bbc.com/news/magazine-30412358>
- Huron, D. & Margulis, E.H. (2010). Music, Expectation and Frisson. In P. Juslin & J. Sloboda (editors) *Handbook of Music and Emotion: Theory, Research, Applications*, 2nd edition. Oxford: Oxford University Press, pp. 575-604.
- Panksepp, J. (1995). The emotional sources of “chills” induced by music. *Music Perception*, Vol. 13, pp. 171-207.

Richard, C. (2014). About ASMR. Retrieved from <http://asmruniversity.com/about-asmr/what-is-asmr/>

Schröder, A., Vulink, N., Denys, D., & Fontenelle, L. (January 23, 2013). Misophonia: Diagnostic Criteria for a New Psychiatric Disorder. *Plos One*, 8, 1.)

Taylor, S. (2013). Head orgasms, meditation and near-death experiences. *The Guardian*, Posted October 9, 2013. Accessed Oct. 31, 2014. <http://www.theguardian.com/science/brain-flapping/2013/oct/09/head-orgasms-mediation-near-death-experiences>

Taylor, V. (2014). YouTube videos trigger tingling ‘brain orgasms’ in ASMR practitioners. *New York Daily News*, Posted February 26, 2014. Accessed Oct. 31, 2014. <http://www.nydailynews.com/life-style/health/videos-trigger-tingling-brain-orgasms-asmr-believers-article-1.1703146>

Tuffnell, N. (2012). ASMR: Orgasms for you brain. *Huffington Post*, Posted February 26, 2012. Update April 27, 2012. Accessed Oct. 31, 2014. www.huffingtonpost.co.uk/nicholas-tuffnell/asmr-orgasms-for-your-brain_b_1297552.html

Appendix 1.

Interview synopsis.

The subject first experienced ASMR as a child, during grade school, and discovered these online videos 3 years ago. The subject frequently watches ASMR videos, typically on a daily basis before bed or during a “lull period” during the day. The subject suggests that it is vital to use headphones to experience ASMR from videos, ideally over-ear headphones to experience the full effects of the audio roaming. She also explained that the sound must be equalized in a certain way to “create a treble-y sound” and eliminate bass. The subject suggests that role-play videos are particularly effective, and expressed a preference for creative content. The subject suggests that good ASMRtists must be non-threatening, more motherly, and generally females are better. She also suggests that she likes nonverbal stimuli, such as the sound of tapping on glass.

The subject describes the sensation as a pleasurable shiver that originates at the shoulder blades and quickly runs up the back of the neck. The subject also experiences frisson, and explains that ASMR is a less emotional experience than frisson. The subject also explains that while watching a video, she may experience ASMR every 30 seconds, whereas frisson may only occur one time.

Appendix 2. Video makers and links for YouTube video sample from Study 1.

ASMR videos Video maker	Video link	General control videos Video maker	Video Link	Talking-head control videos Video maker	Video link
Gentle Whispering ASMR	https://www.youtube.com/watch?v=RvPHgC3ye0	BewDiePie	https://www.youtube.com/watch?v=2gozPQkUDFQ	dope2111	https://www.youtube.com/watch?v=_V7iMAv0mY4
milleseconds!	https://www.youtube.com/watch?v=1AK-eOxRWc	Iasmintriales	https://www.youtube.com/watch?v=DCQPQZR167U	BeGestly	https://www.youtube.com/watch?v=Q-POLa6wKw
Gentle Whispering ASMR	https://www.youtube.com/watch?v=3h4inWX8NIA	UKUEOChannel	https://www.youtube.com/watch?v=LUFv4bBkbg	Toei Locklear	https://www.youtube.com/watch?v=LdVnSvZOgXM
Vocal Vids Vulpes	https://www.youtube.com/watch?v=2g9c2ner9sE	StudioH	https://www.youtube.com/watch?v=0RCYUa3Kkg	crisalinrosylet	https://www.youtube.com/watch?v=ScC85Tm-fMY
Gentle Whispering ASMR	https://www.youtube.com/watch?v=X14yJFzAis	The Fifth Estate Grant Thompson - "The King of Random"	https://www.youtube.com/watch?v=Gc1O9rH_5Y	TuneTheInfamous	https://www.youtube.com/watch?v=2P9rE9hoOZg
ASMRrequests	https://www.youtube.com/watch?v=oeqjZc5f-g	FiveDollStars	https://www.youtube.com/watch?v=og5v2Zr6664	Lexie Torres	https://www.youtube.com/watch?v=dlf_r6GnZBM
ASMRrequests	https://www.youtube.com/watch?v=LMS-VIbc_48	Tadashi Mori	https://www.youtube.com/watch?v=Rw_yarPE1Q	Creative4Kids	https://www.youtube.com/watch?v=_V7iMAv0mY4
Vocal Vids Vulpes	https://www.youtube.com/watch?v=sKGE_WR0O4	Husbin	https://www.youtube.com/watch?v=zOaBIOkpBSw	Kat Sketch	https://www.youtube.com/watch?v=89xN30xv8
Vocal Vids Vulpes	https://www.youtube.com/watch?v=B1EBBTEb0b	Music Video and Funs	https://www.youtube.com/watch?v=Wfmozle4HA	BeautifulYouTV	https://www.youtube.com/watch?v=QO1j34p5Xzg
Heather Feather ASMR	https://www.youtube.com/watch?v=5jGmLz_8I	Rachel Ballinger	https://www.youtube.com/watch?v=YcDJaR17k	Disturb Reality	https://www.youtube.com/watch?v=B36Ehz72cxE
MessageASMR	https://www.youtube.com/watch?v=tsjGmLz_8I	TheEllenShow	https://www.youtube.com/watch?v=eHfOQf5ojU	paulsoursic	https://www.youtube.com/watch?v=9D8G7GnLUw
Teresa Freitas	https://www.youtube.com/watch?v=9Y4Vw49AIFA	Doug Benson	https://www.youtube.com/watch?v=DCRD7ZddPZo	jaicout	https://www.youtube.com/watch?v=0HpbASp7AM
Olivia's Kisses ASMR	https://www.youtube.com/watch?v=p9t9eWoiGk	iscarsen	https://www.youtube.com/watch?v=X77YQ_6iOp4	Rhea Estele	https://www.youtube.com/watch?v=9WEvV3ScTIE
Olivia's Kisses ASMR	https://www.youtube.com/watch?v=GwimLinecll	Niki and Gabi	https://www.youtube.com/watch?v=0V3r6Xxcq0b	TutorialeBvA@	https://www.youtube.com/watch?v=fnUhmB8q4
Heather Feather ASMR	https://www.youtube.com/watch?v=vn1YqecR7s	Kismet	https://www.youtube.com/watch?v=Zz9t4v1VikQ	TutorialeBvA@	https://www.youtube.com/watch?v=Z-ecu85ABKd8
amazed	https://www.youtube.com/watch?v=eo0VjvIEEvs	DisneyCarToks	https://www.youtube.com/watch?v=9CgPwvdGHg	Jordan Liberty	https://www.youtube.com/watch?v=VD47yV2NIMw
Duff The Psych ASMR	https://www.youtube.com/watch?v=fo02Ssg86A	GamesComeFirst!	https://www.youtube.com/watch?v=1sJhuVxR1I	MakeupByEmma	https://www.youtube.com/watch?v=D1_-X7gPjAY
TheWhispering	https://www.youtube.com/watch?v=Jm4q3SZ8RY	Ready5eROCK	https://www.youtube.com/watch?v=xQNIxzalGDw	Vintageoutletx	https://www.youtube.com/watch?v=dD6EX90Q4Y
ASMRrequests	https://www.youtube.com/watch?v=_1GIRBZQbW	muddvixxcatfishone	https://www.youtube.com/watch?v=wSgY3vNNU	superherofitnessx	https://www.youtube.com/watch?v=64h2Y-VgVE
AppreciateASMR	https://www.youtube.com/watch?v=Pelezy71o9M	TheEllenShow			

WhisperLinson	https://www.youtube.com/watch?v=coPKFTpggJc	JusSmile	https://www.youtube.com/watch?v=llqcGedVlw	Kristina G	https://www.youtube.com/watch?v=q4BUsATsg
Heather Feather ASMR	https://www.youtube.com/watch?v=9T9DM5TtB4o	TheEllenShow	https://www.youtube.com/watch?v=mW14jSN2334	JennaMarblesVlog	https://www.youtube.com/watch?v=maL1w9yBRI
PsycheTruth	https://www.youtube.com/watch?v=4MJYLAJ8ZQk	Beautiful Actions Insider	https://www.youtube.com/watch?v=bChDQyq2Bjw	Disney Style	https://www.youtube.com/watch?v=wF2rYDPWAE
The New Massageclips ASMR	https://www.youtube.com/watch?v=mJNpATvZtIA	Chile 2007 Earthquake	https://www.youtube.com/watch?v=YNG7_aAhYy4	The Beauty Babes	https://www.youtube.com/watch?v=bmFe7SV4Lto
asmrmessage	https://www.youtube.com/watch?v=JscCuz9LVr8	Homecoming Heroes	https://www.youtube.com/watch?v=w1b5s2YSwQA	MayBaby	https://www.youtube.com/watch?v=Q2f8mCF5ig
ASMR Sounds by Sophie / Xcentricity Body Painting	https://www.youtube.com/watch?v=TVw_LGBtM	Household Hacker	https://www.youtube.com/watch?v=AMe7Y7d8hBA	dixiwoa	https://www.youtube.com/watch?v=E7cE39_R9mo
amalel	https://www.youtube.com/watch?v=gaoWdHEf5hQ	Evan Mowery	https://www.youtube.com/watch?v=2F5k91dO9cA	Cookies Cupcakes and Cardie	https://www.youtube.com/watch?v=kAbZVT8dVU
AsmrNovasur	https://www.youtube.com/watch?v=Az9BXPiKSBw	Kenny Sauter	https://www.youtube.com/watch?v=s5HJH872QbE	Maya Mia	https://www.youtube.com/watch?v=MvXlqEbiURg
TheUKASMR	https://www.youtube.com/watch?v=_gscml-apR	HowToBasic	https://www.youtube.com/watch?v=owcOlsgVPec	glowpinkstah	https://www.youtube.com/watch?v=2zaIdg0VUtk